

190.23 g·mol⁻¹

t r a n s i t i o n
m e t a l

Osmium is a chemical element that has the symbol Os and atomic number 76. Osmium is a hard, brittle, blue-gray or blue-black transition metal in the platinum family, and is the densest naturally occurring element. Osmium is known as dense as lead. The density of osmium is 22.59 g/cm³, slightly greater than that of iridium, the second densest element. Osmium is found in nature as an alloy, mostly in ores. Osmium is also used in alloys, with platinum, iridium and other platinum group metals. Those alloys are employed in fountain pen tips, electrical contacts and in other applications where extreme durability and hardness are required.

Os
Osmium
76

OSMIUM

Element Symbol: **Os**

Atomic Number: **76**

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OSMIUM

Element symbol: Os

Atomic number: 76

Osmium was discovered in 1803 by Smithson Tennant and William Hyde Wollaston in England. Smithson Tennant was an English chemistry was appointed professor of chemistry at Cambridge in 1813, but lived to deliver only one course of lectures before being killed in 1815 by the fall of a bridge he was riding. William Wollaston became interested in chemistry, metallurgy and physics during his studies in medicine and became wealthy after developing the first physio-chemical method for processing platinum ore in practical quantities.

It was the chemistry of platinum metal that lead to the discovery of osmium. Platinum dissolves in a hydrochloric and nitric acid mix called aqua regia. It was observed that there was always a small amount of a dark, insoluble residue. Tennant found that this black residue contained two previously undiscovered elements, osmium and iridium. The name Osmium is derived from the greek word 'osme" which means smell. Osmium metal forms a volatile compound with oxygen, called osmium tetroxide. This compound sublims (goes directly from solid to gas) at room temperature and the gas of this compound has an acrid chlorine-like odour. This oxide forms on the outside of pure osmium metal to give the metal a distinct blue hue.

Osmium is the densest natural element, being twice that of lead. Its other claim to fame is that is the hardest metal element. However, because of the toxicity of osmium tetroxides which forms readily, these properties are captured in osmium alloys such as osmiridium (osmium and iridium). This alloy is used in the tips of fountain pens and electrical contacts as it resists wear from frequent operation. The stylus used to play the old 78-rpm records were also made of osmium.

Provided by the element sponsor Robert Buford

ARTISTS DESCRIPTION

In May-June 2009 I was fortunate enough to undertake a two month residency in the University of Tasmania's Rosamund McCulloch studio at the Cite Internationale des Arts in Paris. This time was spent researching information about the use of Australian flora in French decorative arts in the period 1890-1920 by such craftsmen as Emile Galle, Rene Lalique and Auguste Daum.

This research has inspired most of my work since that time so it is no surprise to find that it underlies my images for the periodic table. All these chemicals are integral to the composition or understanding of the universe of which our natural environment is a part.

Background: a pattern based on the Tasmanian Bluegum (Eucalyptus globulus globulus) because it grounds our sense of identity (as Tasmanians) and this is often the basis of our understanding of the world around us. *Colours:* drawn from this same environment because it is naturally part of this sense of place. *Image/text:* because this is the way I work; researching my work before I start to develop imagery and it seemed appropriate to identify both the discoverers and the uses of these chemicals.

While there were many possible ways of producing these prints I have chosen to use a combination of silkscreen and digital printing because they work well together and met the needs of this project.

JOHN INGLETON